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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,069	08/21/2003	Jay N. Bruggeman	03-1481	6969

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INTELLECTUAL PROPERTY  
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100 TECHNICAL DRIVE  
ALCOA CENTER, PA 15069-0001

EXAMINER

BELL, BRUCE F

ART UNIT PAPER NUMBER

1746

DATE MAILED: 09/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/645,069

Applicant(s)

BRUGGEMAN ET AL.

Examiner

Bruce F. Bell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 6-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____                                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____   | 6) <input type="checkbox"/> Other: ____                           |

### **DETAILED ACTION**

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-3, 6-10, 14-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The instant independent claims 1 and 9 now "complete a predetermined action" which was not set forth previously in the instant claims nor is represented in the instant specification in such a manner that would allow one having ordinary skill in the art to know what this predetermined action is that needs to be completed. There is no examples in the instant specification of what is meant by this phrase. Dependent claims based on these independent claims have the same deficiency.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-3, 6-10, 14-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 9 are vague and indefinite with respect to what is done to control the operations in a cell once the predetermined action is completed. It is unclear from the instant claim as set forth as to what is done with all of the sensing and comparing and completing of all the steps, so that the cell is controlled. There is no manipulative step saying what is done. For example, is an addition of aluminum fluoride made to the cell after the completion of the predetermined action, to control the operation of the cell? Or what is being done to control the cell? Correction and/or clarification is requested. Dependent limitations 2, 3, 6-8, 10, 14-20 have the same deficiencies as their instant base claims.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 6-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Desclaux et al (4668350) in combination with Cotton (6440294) and Barron, Jr. et al (20020146057).

Desclaux et al disclose a method for controlling the rate of aluminum fluoride addition to a cryolite-based electrolyte of an aluminum electrolytic reduction cell makes use of the known relation between cell temperature and bath (NaF:AlF<sub>3</sub>) ratio. A target temperature is established corresponding to a target bath ratio. The cell temperature is measured at intervals and the rate of AlF<sub>3</sub> addition altered depending on whether the

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measured temperature is above or below the target temperature. The method is faster than tradition methods involving analysis of electrolyte samples and is amendable to computer control. See abstract. The invention makes use of the known dependence of electrolyte temperature on bath ratio to control the rate of addition of  $\text{AlF}_3$  to a cryolite electrolyte. The method of controlling the addition of  $\text{AlF}_3$  to a cryolite-based electrolyte of an aluminum reduction cell comprises establishing a target cell temperature, establishing a standard rate of addition of  $\text{AlF}_3$ , measuring the actual cell temperature, and in response to the actual temperature measurement, altering the rate of addition of  $\text{AlF}_3$ , by increasing the rate if the temperature is greater than the target cell temperature and decreasing the rate if the temperature is less than the target cell temperature and repeating the steps of measuring the actual cell temperature and altering the rate of addition based on the actual versus target temperatures of the cell. See col. 1, lines 50-64.

Desclaux et al does not disclose crust hole repair or sensing the temperature using infrared.

Cotten discloses crust hole repair for electrolytic cells, wherein the repair is performed by covering the hole with a receptacle containing solid particles. See abstract and col. 2, lines 15-23.

Barron, JR. et al disclose a temperature sensing device and system including a processor, a memory and optics for collecting incident infrared energy to produce a temperature signal. The device and system function to derive one or more signal parameters from the infrared energy and compare these parameters with acceptable,

pre-defined limits. A filtered or unfiltered temperature indication is provided if the parameters lie within a pre-defined limits and a different temperature indication is displayed if one or more parameters exceeds the pre-defined limits. See abstract.

The patent further discloses an internal infrared temperature sensor that may be used for target materials such as glass, aluminum, or silicon and /or a selected product such as a block, a rod or a wafer. The infrared temperature sensor collects the incident infrared energy that originates at the target material and the temperature measurement is obtained from the data obtained at one or more wavelengths. See para [0014-0015]. A computer is disclosed to be attached to thermometric sensor using a cable and that the computer includes a processor and memory for performing the method of acquiring the incident infrared energy via the sensor, so that the raw infrared data, temperature data, signal strength data and /or signal dilution data to the computer via cable is accomplished. See para [0021].

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made because even though the prior art of Desclaux et al does not disclose crust repair or the use of a sensing infrared radiation using an infrared sensor, the prior art of Cotten shows that it is conventional in the art to repair the crust by using solid particles and that the use of an infrared sensor for use with target materials such as aluminum to detect the temperature of the aluminum material remote from the material is known to the person having ordinary skill in the art. The prior art method of controlling operation of a cell for producing aluminum by establishing a standard rate of  $\text{AlF}_3$  addition and using the actual temperature of the

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aluminum to determine the addition amount is known, and since one having ordinary skill in the art knows that accurate temperature reading and control of loss of temperature in an aluminum production cell is necessary, one having ordinary skill in the art would be motivated to use the method of crust repair as set forth in Cotten and use the infrared sensor as set forth in Barron, JR et al to enable a system and method that would yield more control of operations in production of aluminum.

Therefore, the prior art of Desclaux et al in combination with Cotten and Barron, JR et al render the applicants instant invention obvious for the reasons set forth above with respect to the instant claims.

### ***Response to Arguments***

7. Applicant's arguments filed July 6, 2006 have been fully considered but they are not persuasive. Applicant argues that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The examiner has shown that the use of infrared radiation using an infrared sensor with respect to detecting the temperature of aluminum material remotely from the material is known to the person having ordinary skill in the art. The examiner in charge of this application has shown this as being the motivation to use infrared sensors for detecting temperature of aluminum material. Applicants apparently feel that there would be no motivation to use such a device to detect their aluminum in their instant cell using a well known technique known to persons having ordinary skill in the art. These types of systems have been around and used for many different applications such as in space,

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in ear drums, as well as other applications known to persons of ordinary skill. To say that one has to have a reasonable expectation to use this conventional technology in an aluminum cell is like saying that this device would not and could not be used to measure temperature period. It has been well received that infrared sensors are used for measuring temperature and would in fact have a reasonable success in measuring temperature of any type of material. Therefore, this point made by applicants is not persuasive. Temperature measurements made in a conventional manner have been typically used in the determination of operating parameters of conventional electrolytic aluminum cells, so to use a new infrared sensor to measure the temperature which gives an almost immediate response would be a motivation to allow the cell faster response times. As with infrared sensors used to measure the temperature in an ear drum, the response time is fast and almost immediate versus, a regular thermometer which takes time to respond when placed in the mouth. The same concept is true with an aluminum bath, if you used conventional temperature measuring techniques, the response time will be much slower than if an infrared sensor is used which shows almost immediate response times, which will allow the cell operation to be controlled in a more rapid time frame. Therefore, it appears that there is proper motivation to use such a device in the method as set forth in applicants' instant claims.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

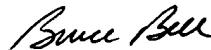
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce F. Bell whose telephone number is 571-272-1296. The examiner can normally be reached on Monday-Friday 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BFB  
September 13, 2006

  
Bruce F. Bell  
Primary Examiner  
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